

CLAIMS

WHAT IS CLAIMED IS:

1. A displacement type expansion machine which is equipped with an expansion
5 mechanism (60, 130) in which power is generated as a result of expansion of high-pressure
fluid supplied to an expansion chamber (62, 137),

wherein:

a communicating passage (72, 80, 140), for establishing fluid communication from a
fluid outflow side of said expansion chamber (62, 137) to an expansion-process intermediate
10 position of said expansion chamber (62, 137), is provided, and

said communicating passage (72, 80, 140) is provided with an opening/closing
mechanism (73, 77, 87, 145).

2. The displacement type expansion machine of claim 1, wherein said
opening/closing mechanism (73, 87, 145) is formed by a check valve which permits fluid flow
15 in a direction from the fluid outflow side of said expansion chamber (62, 137) towards the
expansion-process intermediate position of said expansion chamber (62, 137), but prevents
fluid flow in a direction from the expansion-process intermediate position of said expansion
chamber (62, 137) toward the fluid outflow side of said expansion chamber (62, 137).

3. The displacement type expansion machine of claim 2, wherein said check valve
20 (73, 87, 145) is formed by a spring return type check valve which is configured so as to enter
the open state whenever fluid pressure at the expansion-process intermediate position of said
expansion chamber (62, 137) falls below fluid pressure at the fluid outflow side of said
expansion chamber (62, 137) by more than a predetermined amount.

4. The displacement type expansion machine of claim 1, wherein said
25 opening/closing mechanism (77) is formed by an electromagnetic valve which is configured
so as to enter the open state whenever fluid pressure at the expansion-process intermediate

position of said expansion chamber (62) falls below fluid pressure at the fluid outflow side of said expansion chamber (62) by more than a predetermined amount.

5 5. The displacement type expansion machine of any one of claims 1-4, wherein said communicating passage (80, 140) is formed so as to extend through the inside of a constructional member (61, 132) which constitutes said expansion mechanism (60, 130).

6. The displacement type expansion machine of any one of claims 1-4, wherein said expansion mechanism (60, 130) is configured so as to perform an expansion stroke of a vapor compression refrigerating cycle.

10 7. The displacement type expansion machine of any one of claims 1-4, wherein said expansion mechanism (60, 130) is configured so as to perform an expansion stroke of a vapor compression refrigerating cycle in which a high-level pressure becomes a supercritical pressure.

15 8. The displacement type expansion machine of any one of claims 1-4, wherein:
said expansion mechanism (60, 130) is a rotary type expansion mechanism, and rotational power is recovered by expansion of fluid.

20 9. A fluid machine comprising a casing (31, 101) which houses therein a displacement type expansion machine (60, 130), an electric motor (40, 110), and a compressor (50, 120) which compresses fluid by being activated by said displacement type expansion machine (60, 130) and said electric motor (40, 110),

wherein said displacement type expansion machine (60, 130) is formed by a displacement type expansion machine as set forth in claim 8.

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